

## V

### YAWS AND SYPHILIS \*

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MR. PRESIDENT AND GENTLEMEN,—It is always a little difficult to act as the second opener of a discussion, and Dr. Manson-Bahr has made it no less difficult to-night by covering such a wide field. He has, however, very kindly allowed me to read his paper in advance. I shall, therefore, try to emphasise some of his points, possibly disagree with a few, and mention some others which may be of interest to the discussion.

To this Society the interest of yaws lies in its possible relationship to syphilis; to the tropical practitioner in the possibility of differentiating it from that disease. The first problem is of more than academic interest, because it would deal with the possible evolution of the treponeme from one type to another, perhaps as the result of climatic conditions, or as the result of the interaction of the organism and the body. Bory (*Progrès Méd.*, 1924, No. 26) has put forward such an hypothesis. It is an interesting speculation as to whether yaws as seen to-day among natives is in reality the prototype of syphilis; whether, in fact, one might postulate a series of viruses developed one from another by some process of evolution—that of yaws, that of what has been called “native syphilis,” which does not give rise to lesions in the central nervous system—a dermatropic European type and a neurotic type.

There is a good deal of evidence that would not support such a thesis, but it is worthy of consideration. Under such a scheme of things we might find some support for the idea that yaws has practically remained limited to those of negro and negrito descent, a point having a bearing on some later remarks. As Dr. Manson-Bahr has stated, the causative organisms in the two diseases, yaws and syphilis, are indistinguishable morphologically, and the blood-serum reactions are similar. Sufficient

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## BRITISH JOURNAL OF VENEREAL DISEASES

work over long periods has not yet been done to show whether the Wassermann reaction curves obtained in yaws would resemble those in syphilis. Work along such lines is necessary.

Whether one disease confers immunity against the other is a much vexed question. Using monkeys, Neisser, Von Prowazek, and Castellani hold that neither disease confers immunity to the other; while Levaditi found that monkeys immunised for yaws do not thereby acquire immunity to syphilis, but immunised for syphilis have a partial immunity to yaws. Chesney and Kemp, working with syphilis in rabbits, showed that if an infection has persisted in a rabbit for over three months, and the rabbit be then treated with arsphenamin and cured, as has been shown possible, the animal is then immune and cannot be successfully reinoculated with syphilis—results which go to show, contrary to the old idea that resistance to inoculation is evidence of latent infection, there is a true immunity after the infection is cured; the important point being the length of time which the infection has persisted in the animal. If animals are tested early in the disease, a large number of them can be reinfected. Experiments were then carried out to show whether this time factor entered into the cross-protection of yaws and syphilis. Though their number was small and the evidence not absolutely complete, the results go to prove that experimentally a partial immunity against syphilis can be demonstrated in rabbits which have been infected a long time with yaws and then cured with arsphenamin; this being comparable, it is suggested by Nichols (*Amer. Journ. Trop. Med.* 1925, Vol. 5, No. 6), to some true immunity to syphilis in those persons who have suffered a long course of untreated yaws in childhood. This author has also alluded to the different stains of these *treponemes*, each variety tending to produce its specific type of lesions. Dr. Manson-Bahr has alluded to the belief that "saturation of a community" with yaws virus may produce a relative immunity to syphilis, and quotes Fiji as an example of a country where, among the Polynesians, yaws is widespread, but primary and secondary syphilis were never seen, despite the fact that the disease is widespread among the Indian community living side by side with them. One would like to know,

## YAWS

however, whether the yaws-protected Fijian runs the risk of infection with syphilis. Racial segregation may play an important part, as in Sumatra (Van Driel), where syphilis is very common among the Chinese, but rare among the Bataks.

Harper (*Kenya Med. Journ.*, Vol. 2, No. 1), who holds the same belief as Manson-Bahr, differs from him in finding cases of general paralysis, tabes, optic atrophy, and aortic aneurysm among the Fijians; very significant facts, and hardly explained, I venture to think, by Harper's label of "paraframboesial diseases." Harper also goes so far as to agree with Butler in the belief that yaws may be inherited and is a cause of miscarriage. Parham holds much the same views about the Samoans, views to which few others subscribe. A few cases have been reported as congenital yaws, but they appear to be more than dubious.

The fact that primary chancres have rarely or never been seen has been put forward as evidence against the presence of syphilis in a native community. The fact is, I believe, a correct observation, but the evidence of observers among other native communities wherein syphilis is rife goes to prove that among them, too, a primary sore is seldom seen. This early lesion may give rise to no symptoms for which a native will seek treatment, and the same may be true of secondary eruptions. This has been remarked by Gilks and others in Africa. Another fact has to be taken into account—infection with syphilis may, and does, take place in childhood in some native communities where the disease is widespread, and the primary lesion is then commonly extragenital.

In dealing with the literature of yaws one is constantly up against the position of that disease having had syphilis as an elder brother, whose old clothes the younger one has had to wear. In other words, yaws has always been described in terms of syphilis. Spittel, in his monograph on "Yaws in Ceylon," referring to the possibility of the nervous system being affected, says, "The disease (yaws) bears too close a resemblance to syphilis for this not to be so." Some writers on the other side of the Atlantic (Parsons, *Amer. Journ. Syph.*, Vol. 11, No. 1) frankly do not attempt to differentiate the two conditions, and speak of Treponematoses to include both.

## BRITISH JOURNAL OF VENEREAL DISEASES

Is it possible to do so? On the experimental side, Pearce and Brown (*Journ. Exper. Med.*, 1925, Vol. 41, No. 5) hold that the granular periorchitis produced by intratesticular injections of *T. pertenue* in rabbits is diagnostic of this organism; but this side of the subject I do not propose to go into further.

Dr. Manson-Bahr has mentioned some differential characters of the two diseases; under geographical distribution, I should like to emphasise the fact that yaws is strictly a tropical disease, as he has said, limited by Cancer and Capricorn. Whether the disease is extending or not is, I think, uncertain. Allusion has been made to the alarming spread in Central Africa. The rapidly rising figures returned from our East African colonies merely point, I believe, to increased chances of recognition. The natives present themselves in increasing numbers for the treatment which they recognise as so efficacious, and which has only been offered them in recent years.

Not only is yaws limited to the tropics, but it is doubtful if any territory lying within the tropics is free of the disease. That it is necessary to look for, and know how to look for, a disease before finding it among native races has often been borne in on me. An excellent example of how possible error may occur may be taken from Assam, where Ramsey (*Journ. Trop. Med. and Hyg.*, Vol. 28, No. 4) found that in the cold climate of the mountain areas the inhabitants only showed condyloma-like lesions in the warm, moist parts of the body, about the anus, the genitalia and axillæ, but that these same hill-dwellers, on coming down to the hotter plains, developed typical florid yaws. Yaws was at one time thought to be a disease of low-lying areas, but Sellards and Lopez-Rizel (*Philip. Journ. Sci.*, Vol. 30, No. 4) observed the disease at 2,500 feet and over in the Philippines; the same is true for Africa, and Oho found cases in Formosa at 5,000 feet.

All those of us who are familiar with framboesia, I think, believe that the typical yaw is diagnostic, and that an ordinary case of yaws in the secondary stage cannot be mistaken for any other disease. A framboesiform eruption is described in syphilis, and such a case is figured by Jacobi. Fox and Ochs (1922) published a similar case, but the evidence would not seem conclusive that

## YAWS

the case was one of syphilis. One would very much like to know whether there is any syphilide that, beyond resembling a framboeside, could be mistaken for one. Unfortunately there are very few with a wide knowledge of syphilis who have also studied yaws.

The primary yaw, which in no way differs from the lesion of the secondary eruption, is, when developed, a granuloma, and should not be described as an ulcer, a term which, I think, has crept into the literature from the French, who use the word to mean any sore.

The nomenclature of yaws lesions leaves much to be desired, a fact depending upon a lack of knowledge of the pathological processes underlying the clinical manifestations. It is, unfortunately, only too common in medical literature to see clinical descriptions and the sections on pathology divorced one from the other. I suggest that the time is ripe for a reinvestigation of the subject, and that then the clinical disease be rewritten in terms of the histo-pathological changes found. For comparison with the pathology of yaws, I would also suggest that a study of the pathology of syphilis in a native race be undertaken. There is a good deal of evidence that the manifestations of that disease among indigenous natives differ somewhat from those seen in Europeans, evidence that the reaction to infection tends to differ in the two cases. Hanschell, working on material at the V.D. Clinic, Royal Albert Dock, found no difference, but other observers in native countries are quite emphatic on the point. Their evidence has to be received, however, with caution, because, as previously stated, the lesions that are seen will depend on whether they are such as will cause the native to seek treatment.

It is worth note here that little has been done in the department of comparative racial physiology comparable to that done in physical anthropology. Such an investigation might throw much light on the manifestations of diseases among coloured peoples.

Nogue, in Senegal, where 100 per cent. of hospital patients are syphilitic, found that early ulceration of the throat and condylomata were rarely seen; the native seeks treatment on account of nocturnal headache and the bone pains of the early tertiary period. The same is true of the South African native. Papular, and especially pustular, rashes are common among secondaries, and in

## BRITISH JOURNAL OF VENEREAL DISEASES

the tertiary period tuberculo-ulcerative lesions. Tertiary lesions are often multiple, pleomorphic, and widely scattered. The two stages are often "concertina-ed" into each other, so that cases often show cutaneous manifestations and visceral lesions at the same time, cardiovascular affections, especially aortitis, being not uncommon.

Rather similar observations have been made among negroes in America, where, however, it would appear that the disease among the dark-skinned is becoming more nearly like that in white men (Zimmermann, *Arch. Dermat. and Syph.*, Vol. 4, No. 1; Levy, *Texas State Journ. Med.*, Vol. 18, No. 10; Baetz, *Proc. Med. Ass., Ismian Canal Zone*, Vol. 7; Wender, quoted by Hill, *Ind. Med. Gaz.*, Vol. 1, No. 2). There is another point I should like to allude to. Many observers, writing of syphilis among native children, appear to believe they are dealing with the inherited disease, and note with surprise the absence of some of the common stigmata, whereas I believe they are dealing with late syphilis, the disease having been contracted in infancy, and it must never be lost sight of that tertiary lesions often appear early.

Now in yaws the skin manifestations typical of syphilis in the native (Africans at least) are not seen. Beside the typical yaw, other eruptions in the early stages are, it is true, described—those referred to by Dr. Manson-Bahr—papules and patches formed of aggregations of minute conical papules, giving a nutmeg-grater surface with furfuraceous desquamation; these are, I believe, early or abortive lesions of the same nature as the type frambœside. In later outcrops, when hyperkeratosis occurs, a condition which has been described as resembling keratosis pilaris or lichen spinosus is produced on the backs and on the exterior surfaces of the arms and, maybe, legs.

On the palms of the hands and soles of the feet the same condition, after loss of the hardened plugs, leaves a very typical condition of pitting. All these skin lesions should, I suggest, be reinvestigated histologically and be defined, once and for all, in a scientific manner, as at present terms used by various writers are often unsatisfactory.

Dr. Manson-Bahr has stated that lesions on mucous

## YAWS

membranes never occur ; Castellani says they are rare. Often, I think, lesions which have been written down as occurring on a mucous membrane have in reality sprung from a mucocutaneous margin ; that they do occur rarely must, I think, be accepted, though I have never seen one myself. Recently a lesion on the tongue has been described, and Esler (*Kenya Med. Journ.*, Vol. 1, No. 11) has reported the cases of six infants suffering from symptoms of severe laryngeal obstruction associated with secondary yaws, whose symptoms disappeared *pari passu* with the eruption after two injections of a bismuth salt.

Dr. Manson-Bahr has dealt fully with tertiary yaws. The division into stages has its uses, but also its disadvantages, as in syphilis ; thus the crab-yaw on the foot, seen years after the initial infection, is probably a persisting secondary, while some of the ulcerations, occurring early in the disease, are tertiary processes.

The late manifestations are characterised by a gummatous-like process, either localised or diffuse, affecting bone, periosteum, epiphysis, joint, tendon sheath, the skin and soft tissues, with or without ulceration. The viscera and central nervous system, it is generally believed, are never affected, though the *T. pertenue* has been recovered in earlier cases from gland, spleen and bone marrow. Schlossberger (*Cent. f. Bakt.*, 1927, Vol. 104, Nos. 1—4) has recently shown, by transplanting into skin-pockets in mice portions of chancres from syphilitic rabbits, which are absorbed in three weeks; that the mice develop a latent infection with no symptoms, and that even ten months later portions of inguinal gland, spleen, and brain, but not blood, from the mouse are infective for rabbits, producing typical lesions. He has, further, shown that the same is true for *T. pertenue* infections. The brain in man may, therefore, harbour the virus of yaws.

Whether gangoza, juxta-articular nodules and goundou should be definitely included among the late manifestations of yaws only more work on the subject will show. I would, anyway, prefer not to call them "paraframboesiform lesions." The term "parasymphilis" has lost its significance, and it were better, I think, to wait before relabelling these interesting clinical conditions.

Botreau-Roussell's experience with goundou is, I

## BRITISH JOURNAL OF VENEREAL DISEASES

think, worth mentioning further, as it exemplifies a point I alluded to before. During four years spent on the Ivory Coast he only saw a single case of the affection ; then in 1916 two cases presented themselves within a few days of each other. They were submitted to successful surgical treatment, with the result that in the next twelve months 123 cases of bony facial tumour turned up at his clinic (113 cases of which he operated on). These formed the material for his monograph. The lesson is obvious. Among 130 cases, 48 presented para-nasal tumour only ; in 65 para-nasal tumour was associated with other bony lesions ; in 10 para-nasal tumour was absent or secondary to other bony facial tumours ; 7 showed osteitis of long bones only. The para-nasal tumour was unilateral in 13, bilateral in 108. The Superior Maxilla was affected in 23 ; Inferior Maxilla in 16 ; Malar, 1 ; Cranium, 2 ; Tibia, 69 ; Fibula, 5 ; Femur, 4 ; Ulna and Radius, 5 ; Clavicle, 3 ; Humerus, 2 ; Phalanx, 1. Such a relative distribution of bony lesions is much the same as has been found by other observers in yaws, except that many have found the phalanges more commonly affected. All Roussell's cases had had yaws.

One word on the subject of treatment. Campaigns on a considerable scale have been launched for the treatment of yaws and syphilis in many of our native colonies and in other countries. Bismuth is being used in our own colonies now in place of arsenicals on account of lessened cost. In either we have a drug giving brilliant initial results with the exception of a few resistant cases ; but the French, Belgians and Dutch believe that results are better with Salvarsan and its homologues. Whatever preparation is being used, reliance is being placed on very short courses of treatment—one, two, sometimes three or more, injections. Such treatment must be considered to be still very much in the experimental stage. Already some authorities have expressed the opinion that much longer courses of treatment are necessary if late manifestations are to be prevented ; some believe, in point of fact, that such short treatment may promote the development of tertiary lesions. Many new drugs are useful, like Stovarsol ; Halarsol (oxyamine-phenyl-dichlorarsine) by intramuscular injection is said to be very potent in yaws. All the work that has been done



## YAWS

in syphilis will have to be done in yaws if treatment is to be established on a scientific basis.

In conclusion—and I hope I have not tried your patience too severely—I should like to join Dr. Manson-Bahr in hoping that beside the rather haphazard therapeutic campaigns being carried on against yaws and syphilis, two diseases which cause a colossal amount of invalidity and permanent maiming among natives in our colonies, scientific investigation into these two diseases along the lines which have been indicated may be carried out in the near future.